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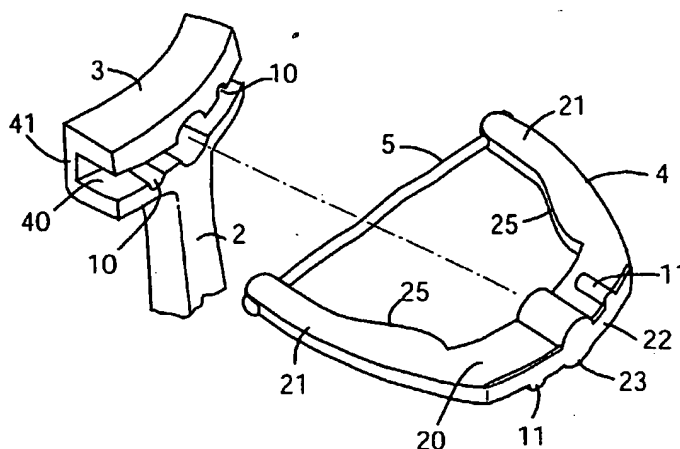
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[Continued on next page]

(54) Title: A DENTAL FLOSS DEVICE



(57) Abstract: A dental floss device (1) comprises a handle (2) having a head piece (3) and a disposable holder (4) for a length of dental floss (5). The holder (4) comprises a base portion (20) and a pair of spaced-apart jaws (21) extending from the base and which extend to embrace the head piece (3) of the handle (2) when the holder (4) is in a correct alignment configuration with respect to the handle (2). The device has an interlock which ensures that the holder (4) can be interengaged with the head piece (3) only when the holder (4) is correctly aligned with the head piece (3). The interlock comprises a head interlock part provided by interlock grooves (10) and a holder interlock part provided by corresponding interlock tongues (11). There are two interlock grooves (10) and corresponding interlock tongues (11) which slidably interengage when the holder (4) is correctly aligned with the head piece (3). If the holder (4) is turned so that it is not correctly aligned with the head piece (3), the interlock tongues (11) of the holder (4) prevent engagement of the holder (4) with the head piece (3). Thus there is no risk that a user will incorrectly align and engage the dental floss holder with the head piece (3).

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— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

"A DENTAL FLOSS DEVICE"

Introduction

5 The invention relates to a dental floss device of the type comprising a disposable dental floss holder for interengagement with a head piece of a handle, on assembly.

Conventional dental floss devices of this type suffer from the disadvantage that there is a risk that a user may not correctly interengage the holder with the head piece of
10 the handle. This leads to inefficient flossing as the floss position is not optimised. There is also a risk that the holder may move and/or become dislodged in use.

There is therefore a need for an improved dental floss device which will address these issues.

15

Statements of Invention

According to the invention there is provided a dental floss device comprising:-

20

a handle having a head piece; and

a dental floss holder for inter-engagement with the head piece;

25 the dental floss holder comprising a base portion and a pair of spaced-apart jaws extending from the base portion to accommodate a length of dental floss therebetween;

30 the jaws of the holder extending to embrace the head piece therebetween in a correct alignment configuration of the holder with respect to the handle; and

an interlock to substantially prevent inter-engagement of the holder with the head piece except when the holder is in the correct alignment configuration.

5 In one embodiment the interlock comprises a head interlock part on the head piece and a holder interlock part on the dental floss holder, the interlock parts being adapted to inter-engage only when the holder is in the correct alignment configuration.

10 Preferably the interlock parts comprise a projection and a recess to receive the projection.

Most preferably the interlock parts are a push fit when the holder is in the correct alignment configuration.

15 In one embodiment the interlock parts comprise an interlock tongue and a corresponding interlock groove to receive the interlock tongue. Preferably the interlock tongue is slidably engagable in the interlock groove when the holder is correctly aligned with the head piece. Advantageously the interlock tongue is of arcuate shape in cross section and the interlock groove is of complementary arcuate
20 shape.

In one embodiment the interlock comprises a single head interlock part and a single holder interlock part.

25 In another embodiment the interlock comprises at least two head interlock parts on the head piece and at least two holder interlock parts on the dental floss holder.

In one embodiment of the invention the device comprises a transversely extending engagement groove on the holder or head piece and a complementary engagement
30 tongue portion on the other of the holder or head piece which engages the

transversely extending engagement groove, on assembly of the holder and head piece.

5 Preferably the interlock comprises a head interlock part and a corresponding holder interlock part, the head interlock part being provided on one of the engagement tongue or engagement groove and the corresponding holder interlock part being provided on the other of the engagement tongue or engagement groove.

10 Preferably the interlock part extends laterally of the engagement tongue or engagement groove.

In one embodiment the dental floss holder comprises a releasable lock for engagement on assembly with the head piece. Preferably the releasable lock comprises snap fit projections.

15 Most preferably the snap fit projections are provided on the jaws of the holder.

In one embodiment the dental floss is a length of dental floss string.

20 In another embodiment the dental floss is a length of dental floss tape.

The invention also provides a handle for a dental floss device of the invention.

25 The invention further provides a dental floss holder for assembly to a head piece of a handle, the dental floss holder comprising a base portion and a pair of spaced-apart jaws extending from the base portion to accommodate a length of dental floss therebetween the jaws of the holder extending to embrace a head piece of a handle therebetween in a correct alignment configuration of the holder with respect to a handle, in use, the dental floss holder having a holder interlock to substantially
30 prevent inter-engagement of the holder with a head piece except when the holder is in a correct alignment configuration.

5 Preferably the holder interlock comprises an interlock projection or an interlock recess for engagement, on assembly with a corresponding interlock tongue or interlock recess of a head piece only when the holder is in the correct alignment configuration. Most preferably the interlock projection comprises an interlock tongue. Preferably the interlock recess comprises an interlock groove.

10 Preferably the interlock tongue or the interlock groove extends from the base portion of the holder

Brief Description of the Drawings

15 The invention will be more clearly understood from the following description thereof given by way of example only with reference to the accompanying drawings, in which:-

Fig. 1 is a perspective view of an assembled dental floss device of the invention;

20 Fig. 2 is another perspective view of the device;

Figs. 3(a) and 3(b) are perspective views illustrating the assembly of a dental floss holder part and a handle head piece part of the device;

25 Fig. 4 is a perspective view of a dental floss holder according to the invention;

Fig. 5 is a top plan view of the holder of Fig. 4;

Fig. 6 is an end view of the holder of Fig. 4;

Fig. 7 is an end view of the holder mounted to a head piece;

30

Fig. 8 is a perspective view of another holder of the invention;

Figs. 9(a) and 9(b) are perspective views illustrating the assembly of a dental floss holder part and a handle head piece part of another dental floss device of the invention;

5

Fig. 10 is a perspective view of a holder part of the device of Fig. 9;

Fig. 11 is top plan view of the holder of Fig. 10;

10

Fig. 12 is an end view of the holder of Fig. 10;

Fig. 13 is an end view of the holder of Fig. 10 mounted to a head piece;

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Fig. 14 is a perspective view of a dental floss holder part and a handle head piece part of another dental floss device of the invention;

Fig. 15 is top plan view of the holder part of the device of Fig. 14;

20

Fig. 16 is an end view of the holder part of the device of Fig. 14;

Fig. 17 is an end view of the holder part mounted to the head piece of the dental floss device of Fig. 14;

25

Fig. 18 is a cross sectional view of the device of Fig. 17 along the line indicated in Fig. 17;

Fig. 19 is a side perspective view of the handle head piece part of the device of Fig. 14;

30

Fig. 20 is a side perspective view of the holder part of the device of Fig. 14;

Fig. 21 is an end perspective view of the handle head piece part of the device of Fig. 14; and

5 Fig. 22 is a cross sectional view of the handle head piece of Fig. 21 along the line indicated in Fig. 21.

Detailed Description

10 Referring to the drawings and initially to Figs. 1 to 7 thereof there is illustrated a dental floss device 1 according to the invention comprising a handle 2 having a head piece 3 and a disposable holder 4 for a length of dental floss 5. The device has an interlock which ensures that the holder 4 can be interengaged with the head piece 3 only when the holder 4 is correctly orientated and aligned with the head piece 3, as
15 illustrated. The interlock comprises a head interlock part provided by interlock grooves 10 and a holder interlock part provided by corresponding interlock tongues 11. In this case, there are two interlock grooves 10 and corresponding interlock tongues 11 which slidably interengage when the holder 4 is correctly aligned with the head piece 3. If the holder 4 is turned so that it is not correctly aligned with the
20 head piece 3, the interlock tongues 11 of the holder 4 prevent engagement of the holder 4 with the head piece 3. Thus there is no risk that a user will incorrectly align and engage the dental floss holder 4 with the head piece 3.

In more detail, the holder 4 comprises a base portion 20 which in this case is of
25 arcuate shape in longitudinal cross section and a pair of spaced-apart jaws 21 extending from the base portion 20 to accommodate a length of floss 5 therebetween. The base portion 20 includes an enlarged central section 23 and interlock tongue 11 extends laterally of the base portion 20. In this case there are two interlock tongues 11 which extend from opposite sides of the base portion 20. The jaws 21 each have
30 inwardly extending snap fit projections 25.

The correct alignment configuration of the holder is, as illustrated, when the jaws 21 of the holder extend to embrace the head piece therebetween. An incorrect alignment of the holder to the head piece would be if a user positioned the holder such that the jaws did not embrace the head piece but rather extended away from it.

5

The handle 2 is shaped and contoured for ease of holding and use by a user. The head piece 3 has a transversely extending engagement groove 40 which is of complementary arcuate shape to that of the base portion 20 of the holder 4. In effect, the base portion 20 of the holder 4 forms an engagement tongue which is releasably engaged, on assembly, in the engagement groove 40 of the head piece 3 of the handle 2.

10

The head piece 3 also has an end or floor section 41 over which the snap projections 25 of the holder 4 pass and behind which the snap projections 25 engage, an assembly. In this way the holder 4 is securely engaged with the head piece 3.

15

In use, the holder 4 is fitted to the head piece 3 by first inserting the head piece through the gap defined between the jaws 21 and floss length 5 of the holder 4. The base portion or engagement tongue 20 is then correctly aligned with the engagement groove 40 and the interlock tongues 11 and grooves 10 are also aligned. The holder 4 is then pressed using light pressure to snap fittingly engage the projections 25 behind the floor 41 of the head piece 3. To release the holder 4 from the head piece 3 finger pressure is used to reverse the procedure by first disengaging the snap projections 25 from behind the floor 41 of the head piece 3. The spent holder 4 can then be disposed of and replaced by a fresh holder 4.

20

25

Referring to Fig. 8 there is illustrated an alternative holder 50 in which a length of floss tape 51 extending between the jaws 21.

30

An alternative embodiment of the invention is illustrated in Figs. 9 to 13 which is similar to that of Figs. 1 to 7 and like parts are assigned the same reference numerals.

In this case, there is only one interlock tongue 11 and interlock groove 10. There may also be two grooves 10 in the handle and one tongue 11 on the holder.

5 A further alternative embodiment of the invention is illustrated in Figs. 14 to 22 which is similar to that of Figs. 1 to 7 and like parts are assigned the same reference numerals.

10 In this case, there are two interlock receiving recesses 60 substantially hemi-spherical in shape in the engagement groove 40 of the holder 4. Corresponding substantially hemi-spherical projections 61 are located on the base portion 20 of the head piece 3. The head piece 3 may comprise only one corresponding projection 61.

15 The substantially hemi-spherical receiving recess 60 extends laterally to the edge 63 of the engagement groove 40. A laterally extending channel 62, extending from the receiving recess 60 to the edge 63 of the engagement groove 40, has a smaller radius than the radius of the receiving recess 60 as shown especially in Figs. 17 to 19 and 21 and 22.

20 On assembly of the head piece 3 with the holder 4, the outer edges 63 of the engagement groove 40 deform slightly to allow the base portion 20 of the holder 4 with the hemi-spherical projections 61 to slidably engage with the corresponding laterally extending channel 62 of the receiving recess 60. The hemi-spherical projections 61 on the head piece 3 have a radius corresponding to the receiving recesses 60. The holder 4 is securely engaged with the head piece 3 when the hemi-spherical projections 61 snap-fittingly engage securely with the corresponding receiving recess 60. Such an engagement system ensures that the holder 4 is correctly aligned with the head piece 3.

25 30 The invention is not limited to the embodiments hereinbefore described which may be varied in detail.

CLAIMS

1. A dental floss device comprising:-

5

a handle having a head piece; and

a dental floss holder for interengagement with the head piece;

10

the dental floss holder comprising a base portion and a pair of spaced-apart jaws extending from the base portion to accommodate a length of dental floss therebetween;

15

the jaws of the holder extending to embrace the head piece therebetween in a correct alignment configuration of the holder with respect to the handle; and

an interlock to substantially prevent inter-engagement of the holder with the head piece except when the holder is in the correct alignment configuration.

20

2. A device as claimed in claim 1 wherein the interlock comprises a head interlock part on the head piece and a holder interlock part on the dental floss holder, the interlock parts being adapted to interengage only when the holder is in the correct alignment configuration.

25

3. A device as claimed in claim 2 wherein the interlock parts comprise a projection and a recess to receive the projection.

30

4. A device as claimed in claim 2 or 3 wherein the interlock parts are a push fit when the holder is in the correct alignment configuration.

5. A device as claimed in any of claims 2 to 4 wherein the interlock parts comprise an interlock tongue and a corresponding interlock groove to receive the interlock tongue.
- 5 6. A device as claimed in claim 5 wherein the interlock tongue is slidably engagable in the interlock groove when the holder is correctly aligned with the head piece.
- 10 7. A device as claimed in claim 5 or 6 wherein the interlock tongue is of arcuate shape in cross section and the interlock groove is of complementary arcuate shape.
8. A device as claimed in any of claims 2 to 7 wherein the interlock comprises a single head interlock part and a single holder interlock part.
- 15 9. A device as claimed in any of claims 2 to 7 wherein the interlock comprises at least two head interlock parts on the head piece and at least two holder interlock parts on the dental floss holder.
- 20 10. A device as claimed in any preceding claim comprising a transversely extending engagement groove on the holder or head piece and a complementary engagement tongue portion on the other of the holder or head piece which engages the transversely extending engagement groove, on assembly of the holder and head piece.
- 25 11. A device as claimed in claim 10 wherein the interlock comprises a head interlock part and a corresponding holder interlock part, the head interlock part being provided on one of the engagement tongue or engagement groove and the corresponding holder interlock part being provided on the other of the engagement tongue or engagement groove.
- 30

12. A device as claimed in claim 11 wherein the interlock part extends laterally of the engagement tongue or engagement groove.
- 5 13. A device as claimed in any of claims 1 to 12 wherein the dental floss holder comprises a releasable lock for engagement on assembly with the head piece.
14. A device as claimed in claim 13 wherein the releasable lock comprises snap fit projections.
- 10 15. A device as claimed in claim 14 wherein the snap fit projections are provided on the jaws of the holder.
16. A device as claimed in any preceding claim wherein the dental floss is a length of dental floss string.
- 15 17. A device as claimed in any of claims 1 to 16 wherein the dental floss is a length of dental floss tape.
18. A dental floss device substantially as hereinbefore described with reference to the accompanying drawings.
- 20 19. A handle for a dental floss device as claimed in any preceding claim.
20. A dental floss holder for a dental floss device as claimed in any of claims 1 to 18.
- 25 21. A dental floss holder for assembly to a head piece of a handle, the dental floss holder comprising a base portion and a pair of spaced-apart jaws extending from the base portion to accommodate a length of dental floss therebetween, the jaws of the holder extending to embrace a head piece of a handle therebetween in a correct alignment configuration of the holder with
- 30

respect to a handle in use, the dental floss holder having a holder interlock to substantially prevent inter-engagement of the holder with a head piece except when the holder is in a correct alignment configuration.

- 5 22. A holder as claimed in claim 21 wherein the holder interlock comprises an interlock projection or an interlock recess for engagement, on assembly with a corresponding interlock tongue or interlock recess of a head piece only when the holder is in the correct alignment configuration.
- 10 23. A holder as claimed in claim 22 wherein the interlock projection comprises an interlock tongue.
24. A holder as claimed in claim 22 wherein the interlock recess comprises an interlock groove.
- 15 25. A holder as claimed in any of claims 21 to 24 wherein the interlock tongue or the interlock recess is provided in or on the base portion of the holder.
26. A dental floss holder substantially as hereinbefore described with reference to
- 20 the accompanying drawings.

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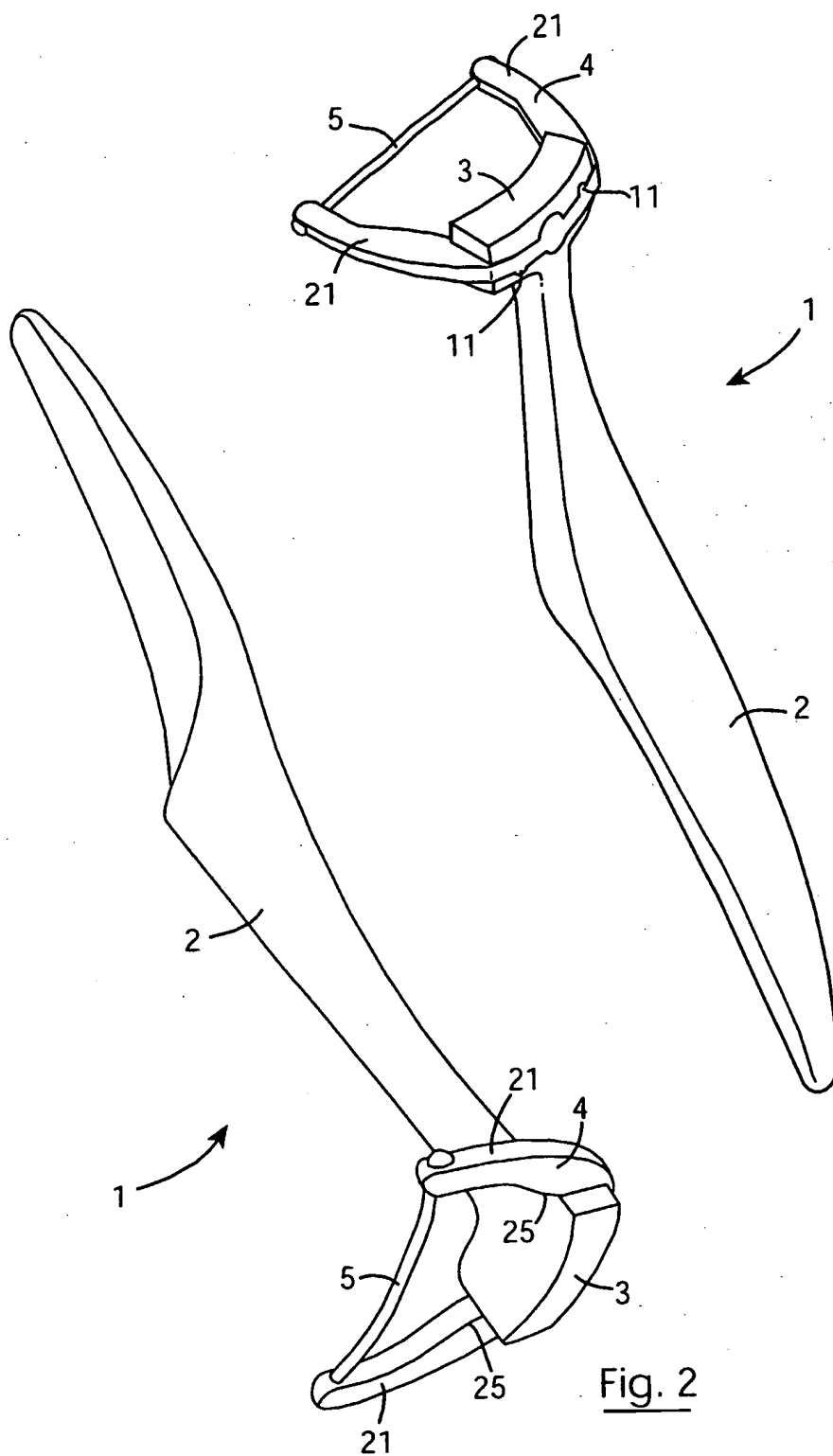


Fig. 1

Fig. 2

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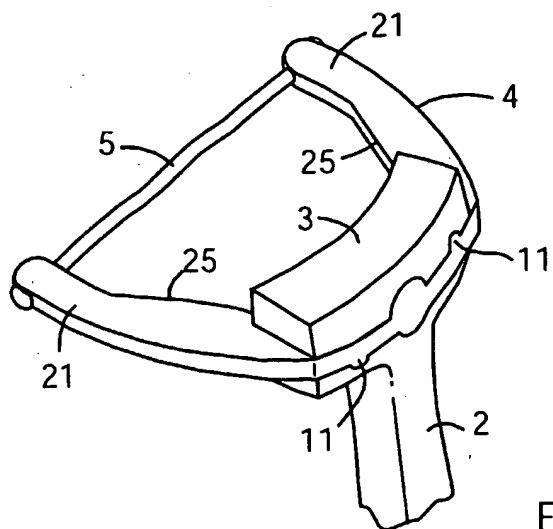


Fig. 3(b)

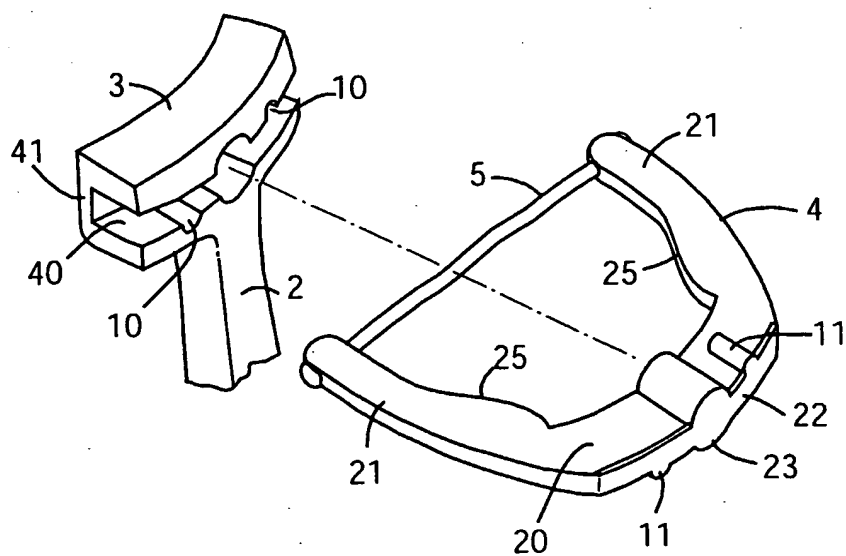


Fig. 3(a)

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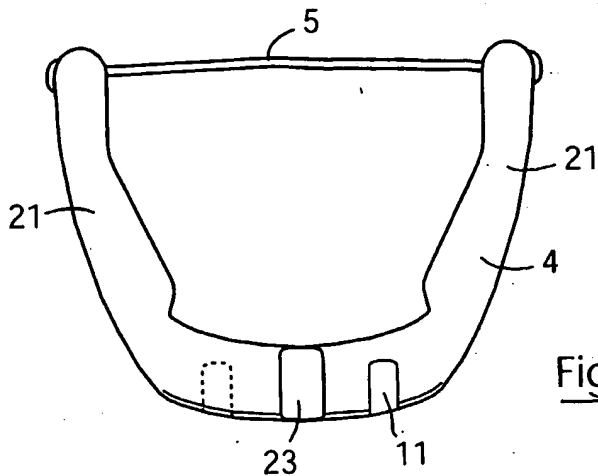


Fig. 5

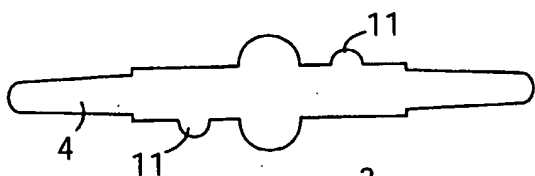


Fig. 6

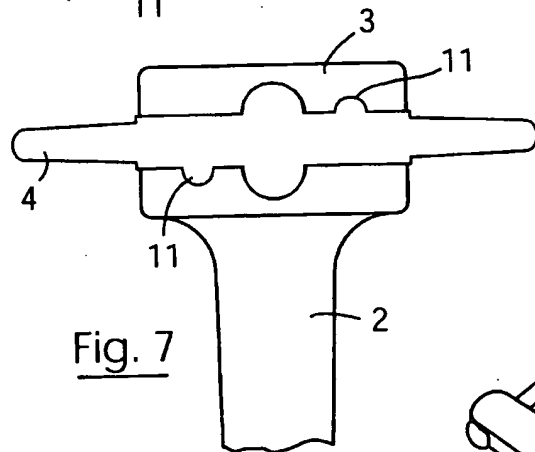


Fig. 7

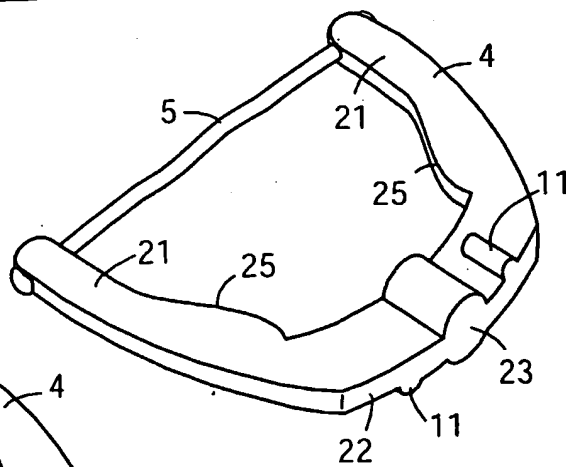


Fig. 4

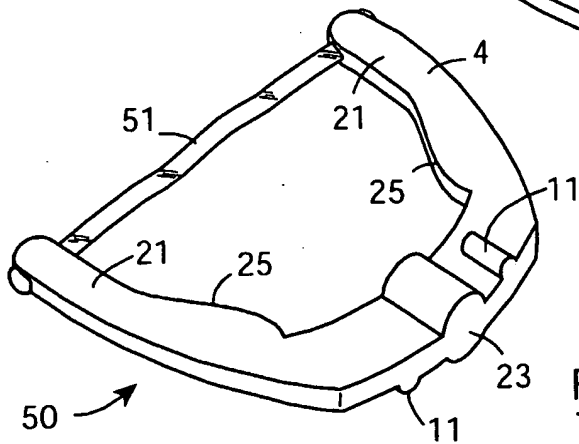


Fig. 8

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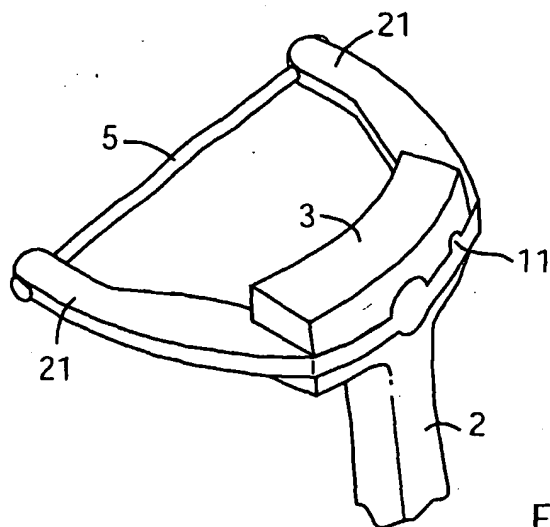


Fig. 9(b)

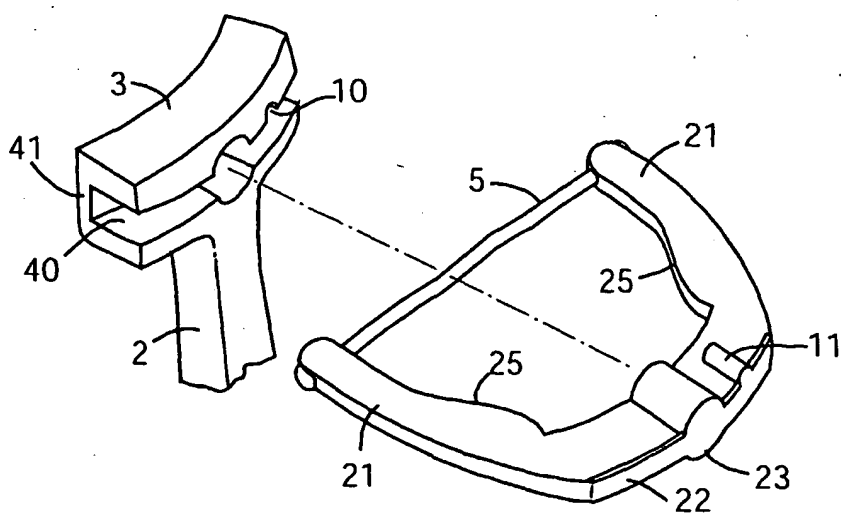


Fig. 9(a)

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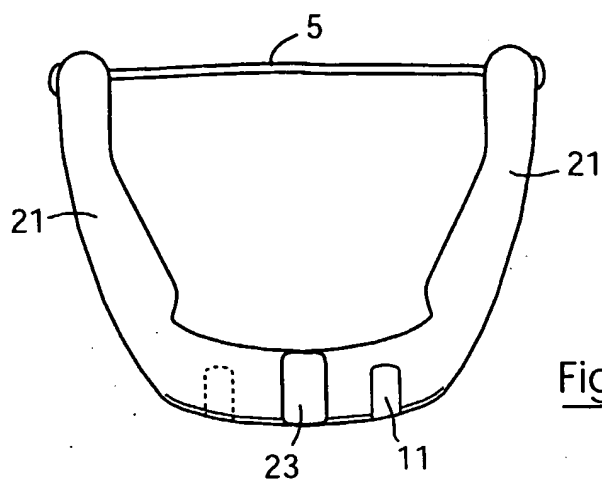


Fig. 11

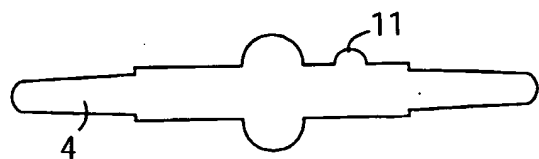


Fig. 12

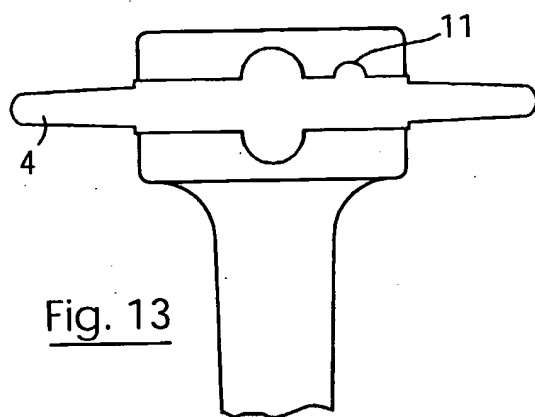


Fig. 13

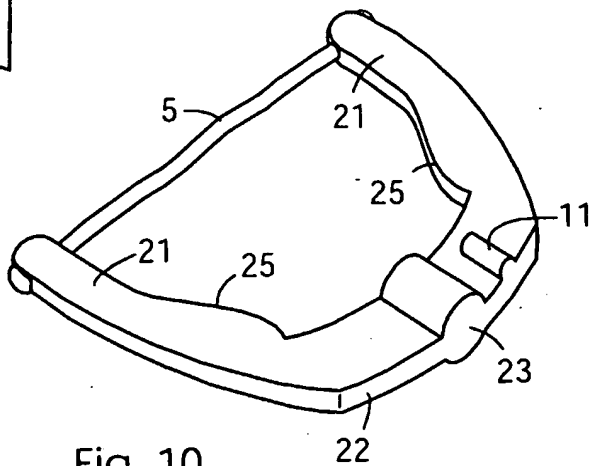


Fig. 10

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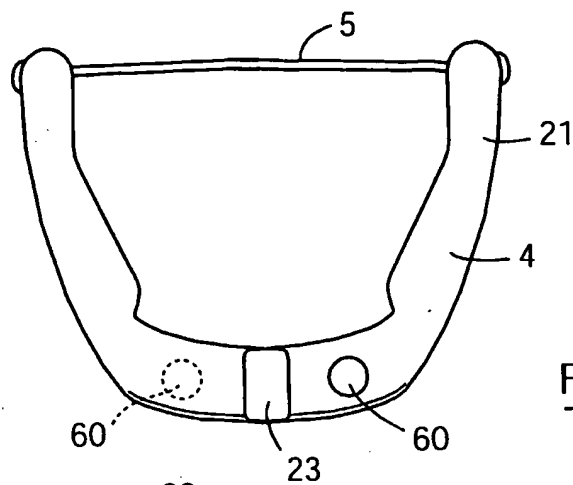


Fig. 15

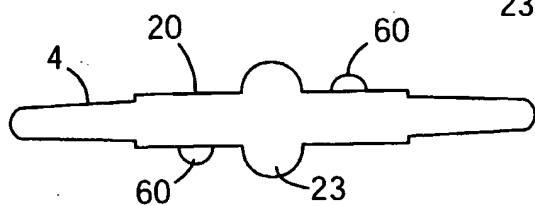


Fig. 16

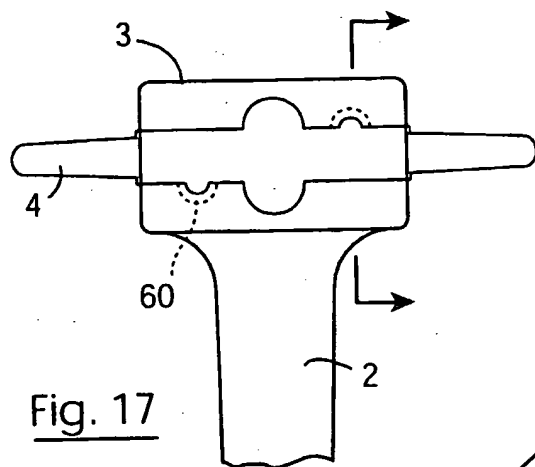


Fig. 17

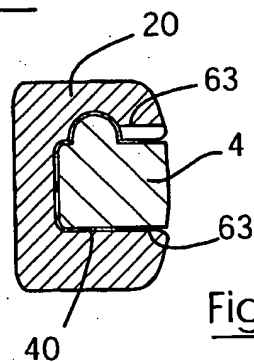


Fig. 18

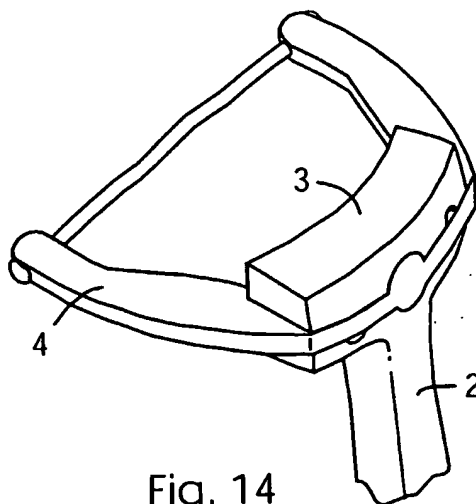


Fig. 14

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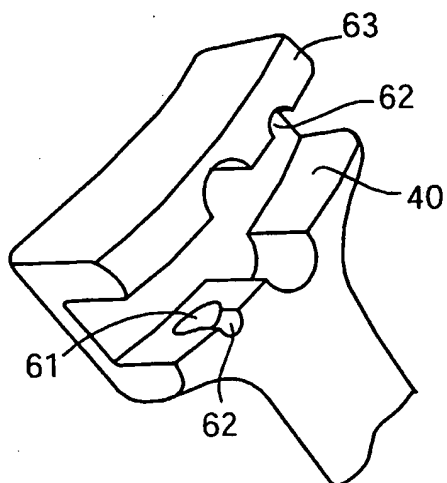


Fig. 19

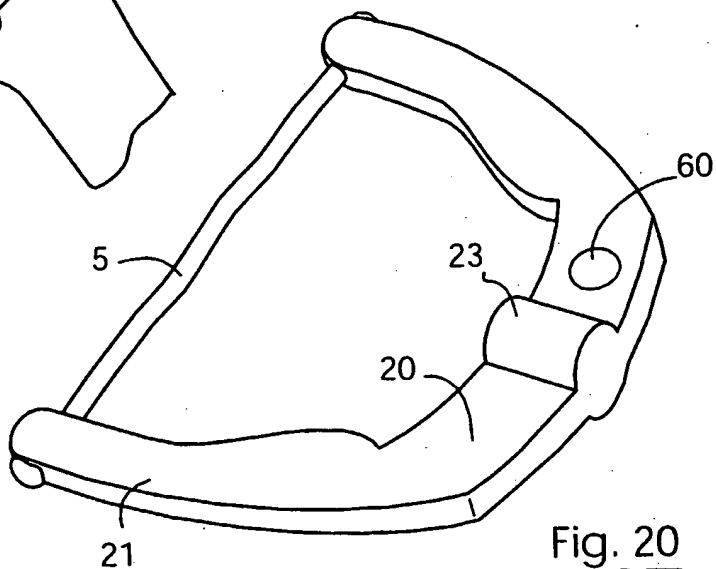


Fig. 20

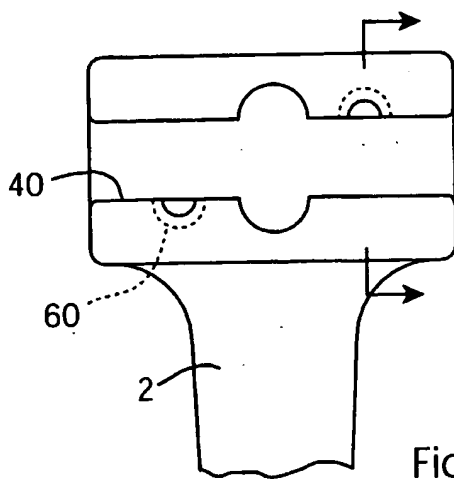


Fig. 21

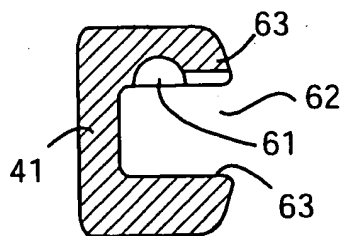


Fig. 22

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IE 02/00160

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61C15/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 483 982 A (BENNETT CLAYTON ET AL) 16 January 1996 (1996-01-16) the whole document ---	1-17, 19-25
X	US 5 056 540 A (PAGE DANIEL A) 15 October 1991 (1991-10-15) figures ---	1-17, 19-25
X	US 3 927 686 A (ZAMBITO JAMES B) 23 December 1975 (1975-12-23) the whole document ---	1-17, 19-25
X	DE 87 08 369 U (SAUREN HUBERTS) 10 September 1987 (1987-09-10) page 7, paragraph 3; figures ---	1-17, 19-25
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 5 127 415 A (PRECIUTTI ROBERTO) 7 July 1992 (1992-07-07) figures</p> <p>-----</p>	

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 18, 26

Claims 18 and 26 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claims attempt to define the subject-matter by reference to the accompanying drawings.

Consequently, claims 18 and 26 relate to an extremely large number of possible devices, that a meaningful search over the whole of the claimed scope is impossible.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IE 02/00160

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 18, 26
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IE 02/00160

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